

COLD-BLOODED VERTEBRATES FROM COSTA RICA AND THE CANAL ZONE.

BY HENRY W. FOWLER.

During the summer of 1915 Mr. David E. Harrower gathered the collections listed below, which were later purchased by the Academy. Several of the fishes are new to science, and other records are for rare or unusual forms.

COSTA RICA.

The collections made in Costa Rica were obtained at Guapilis, the Chirripo River Valley and Port Limon, all in the Atlantic drainage.

GUAPILIS.

A small collection of fresh-water fishes was obtained in the basin of the Rio Guapilis.

Astyanax æneus costaricensis Meek.

Head $3\frac{4}{5}$; depth $2\frac{1}{2}$ to $2\frac{3}{4}$; D. III, 8 to III, 9; A. III, 25, 1 to III, 27, 1; scales 34 to 36 in lateral line to caudal base and 3 more on latter; snout $3\frac{7}{8}$ to 4 in head; eye 3 to $3\frac{1}{8}$; maxillary $2\frac{1}{4}$ to $2\frac{1}{3}$; interorbital $2\frac{7}{8}$ to 3; maxillary teeth 1-2 and 1-1, inner row 4-4. Color when fresh in alcohol olive-brown on back. Broad lateral brassy band, nearly wide as eye, changes behind into leaden-dusky blotch at middle of caudal base, and continues out on median caudal fin-rays to their edges. Hind edges of each caudal lobe narrowly blackish, fin gray, and lower lobe tinged with red. Dorsal warm brown. Adipose fin gray. Anal gray, darker along lower edge and in front with median blood-red tinge or blotch, fading out behind. Pectoral dilute reddish. Ventral bright vermilion. Iris yellowish. Two examples 98 and 100 mm. in length.

Alfaro cultratus (Regan).

Color olivaceous above, when fresh in alcohol. Dusky median streak on back. Iris olivaceous. Lower surface of body and head paler than back. Dusky streak extends down each side of lower jaw and on under side of head till opposite hind pupil edge. Dorsal gamboge-olive. Caudal olive-gray. Other fins pale gamboge. Three examples, 52 to 58 mm.

Priapichthys annectens (Regan).

Head $3\frac{2}{3}$; depth 3; D. I, 9; A. III, 7; scales 28 to caudal base and about 10 more on caudal basally; 9 scales between dorsal and anal origins; 20 scales before dorsal; snout $2\frac{1}{5}$ in head measured from upper jaw tip; eye $3\frac{1}{3}$; maxillary $2\frac{2}{3}$. Gill-rakers about 15 short points. On head above several large cavities or channels lengthwise from near front of snout till over middle of eyes. A transverse channel posteriorly also over eye on each side, and still posteriorly 2 more large pores. Color when fresh in alcohol olivaceous-dusky above and on sides, all scales strongly contrasted by dark or dusky-black borders, forming a prolonged reticulated pattern. Under surface of head and trunk pale to whitish. Jaws dusky. Iris olive. Dorsal olivaceous, marginally grayish and each membrane at base with blackish blotch. Caudal gray, olive-gamboge basally. Pectoral pale olive. Ventral yellowish. Anal bright orange-red in front, edge behind, and basal portion yellowish. One example, a female, 63 mm.

Pæciliopsis isthmensis Regan.

Color of male fresh in alcohol olivaceous above and on sides, lower surface of head and trunk paler. Each scale with dark edge sharply defined and producing greatly contrasted reticulated pattern. Row of underlaid narrow leaden vertical lines or streaks, about 14 in number, along middle of sides. Fins grayish, edges slightly darker. Dorsal mostly tinged olive basally. Edge of intromittent organ dusky. Iris dark. Length 43 mm. for largest, and 22 mm. for smallest, in series of eleven examples. The smaller males show the anal tinged with orange, and dorsal and caudal bases gamboge. Also black dots at edges of scales.

Adult female with scales very dark edged. Dusky spot on each dorsal membrane before dorsal ray basally. Anal gray and ventral whitish. Dusky blotch above vent. Iris olive. One example 50 mm. long.

Pæciliopsis maculifer sp. nov. Fig. 1.

Head $4\frac{1}{3}$; depth $3\frac{2}{3}$; D. I, 8; A. III, 7; P. I, 11; V. I, 5; scales 29 in lateral series to caudal base and 3 more on latter; 9 scales between dorsal and anal origins; 17 scales before dorsal; head width $1\frac{2}{5}$ its length; second branched dorsal ray $1\frac{1}{4}$; first branched anal ray $1\frac{1}{2}$; least depth of caudal peduncle $1\frac{2}{5}$; caudal little longer than head; pectoral $1\frac{1}{5}$; ventral $1\frac{2}{5}$; snout $3\frac{1}{4}$ in head, measured from upper jaw tip; eye $3\frac{1}{4}$; maxillary 3; interorbital $1\frac{1}{2}$.

Body elongate, rather robust forward, deepest at ventral origin, well compressed, predorsal region moderately depressed and abdomen somewhat pot-bellied. Caudal peduncle somewhat large, elongate, least depth but slightly over half its length.

Head small, depressed above, convex below and profiles alike. Snout broad, depressed above, and length (in profile) about half its width. Eye rounded, rather high, and about midway in head length. Eyelids free. Premaxillaries greatly protractile. Maxillary little free, vertical, mostly concealed, and not reaching eye. Mouth small. Lower jaw rather weak, slightly protrudes, and at unison of rami rather weak, shallow. Teeth small, uniform, simple, conic, in a single row and flexibly fastened at bases. Lips rather

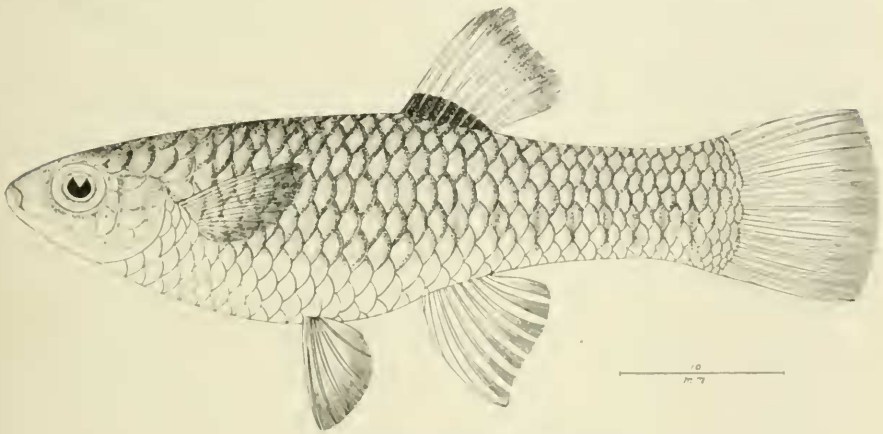


Fig. 1.—*Paeciliopsis maculifer* Fowler.

thin. Tongue small, depressed, free in front. Nostril close above upper front eye edge. Interorbital flattened. Preopercle ridge inclined slightly forward.

Gill-opening extends forward about opposite hind pupil edge. Rakers about 16 short weak points, about $\frac{2}{3}$ of filaments, and latter about half of eye.

Scales large, cycloid, narrowly imbricated, largest on upper surface of head, and become small on caudal peduncle behind. Scales on breast and belly but little smaller than those on sides. Caudal base with several irregular rows of small scales. Several rather large pores or pits on head above, one directly behind upper hind edge of eye. Mucous channel, opening by several pores, along edge of preopercle. Side of snout with several smaller pores.

Dorsal inserted about midway between hind pupil edge and caudal base, second branched ray highest, and depressed fin extending slightly over half way to caudal base. Anal inserted slightly behind dorsal origin, reaches about half way to caudal base when depressed, and first branched ray longest. Both dorsal and anal form distinct point in front at tip of second branched ray, and upper front edge of each also slightly emarginate. Caudal with hind edge convex, each corner forming slight angle. Pectoral rather broad, extends back opposite ventral origin. Ventral inserted about midway between pectoral and anal origins, depressed fin reaching latter, and first branched ray longest. Vent and genital orifice close before anal.

Color when fresh in alcohol olive-yellow generally above, edges of scales darker. Lower surface of head and belly pale to whitish. Dorsal bright orange-yellow, edge gray and base broadly jet-black. Caudal grayish, base yellowish. Pectoral pale olive. Anal and ventral whitish, tinged with yellowish medianly. Broad dark brown median streak down back and brownish line along lower surface of caudal peduncle from anal to caudal base. Iris olive.

Length 55 mm.

Type, No. 45,391, A. N. S. P. (Female.) Rio Guapilis at Guapilis, Costa Rica. July, 1915. D. E. Harrower.

Also Nos. 45,392 to 45,394, same data, paratypes, all females. They show: Head $3\frac{1}{3}$ to 4; depth $3\frac{1}{2}$ to 4; D. 1, 8; A. III, 7; scales 30 to 32 in lateral series to caudal base and 3 more on latter; snout 3 to $3\frac{1}{4}$ in head, measured from upper jaw tip; eye $2\frac{2}{3}$ to $2\frac{1}{2}$; inter-orbital 2; length 25 to 46 mm.

Allied with the preceding species in having the dorsal origin slightly before that of the anal. It differs in the more elongate body. In the small head it resembles *P. pittieri*, though that species is said to have the depth 2.6 to 2.8. The jaws are not so broadly truncate as in *Pacilopsis* generally, but have a more rounded appearance laterally, as in *Fundulus* and allied genera.

(*Macula*, spot; *fero*, to bear; with reference to the black basal dorsal blotch.)

***Mollienisia sphenops tropica* (Meek).**

Color of adult female generally olivaceous, under surface of head and trunk paler, when fresh in alcohol. Along side of trunk each scale with small obscure orange spot, producing lengthwise streaks. Dorsal olive, base jet-black over good portion. Caudal and pectoral dull olive. Anal orange, hind edge whitish. Ventral whitish. Iris olive. Length 60 mm.

Adult male similar, except black on dorsal broken into numerous small rounded spots, and caudal base slightly mottled. Lower fins whitish. Length 48 mm.

A large female is uniform dark olive above, and paler or whitish below. Fins all paler. Dorsal blotched with black in front at base, and behind basally with some small black dots. Altogether a series of six examples, and all show a black dorsal blotch.

No orange spots on the scales are mentioned for *Platyptæcilus tropicus* Meek and *Pacilia tenuis* Meek. Under *M. sphenops* Regan says,¹ "often a dark spot on each scale of side of body" in female, and in male "spots on sides rarely present."

Cichlasoma spilurus (Günther).

Head $2\frac{1}{4}$; depth $2\frac{1}{5}$ to $2\frac{2}{5}$; D. XVII, 10, 1; A. VIII or IX, 8, 1; snout $2\frac{1}{2}$ to $2\frac{2}{3}$ in head; eye $3\frac{2}{3}$ to 4; maxillary $3\frac{1}{2}$ to 5; interorbital $2\frac{1}{2}$ to $3\frac{1}{8}$. In the small example general color olivaceous, with nine vertical darker bars wider than interspaces along back and sides above, fifth little enlarged medianly as jet-black blotch, and last at caudal base similar. Fins all grayish, ventral brownish along front edge. The larger example is obscure brownish generally, tinged with moss-green on soft dorsal, anal, caudal, pectoral and sides of head. Eight vertical dusky-brown bars, little broader than interspaces, fourth and last black and greatly pronounced. Spinous dorsal, anal and front ventral edge dusky, rest of fin like back. Iris slaty. Lower lip pale. Two examples, 70 and 104 mm. long.

Cichlasoma alfari Meek.

Head $2\frac{2}{5}$ to $2\frac{1}{2}$; depth $2\frac{1}{5}$ to $2\frac{1}{2}$; D. XVII or XVIII, 10 or 11; A. VII, 8 or 9; scales 20 or 21 in upper l.l. (9 tubes in young), and 8 to 12 in lower l.l. (3 tubes in young); snout $2\frac{1}{2}$ to $3\frac{1}{4}$ in head; eye 3 to $3\frac{1}{4}$; maxillary $3\frac{1}{4}$ to 4; interorbital $2\frac{1}{5}$ to $3\frac{1}{4}$. Color in alcohol brownish above, paler to whitish below. Snout with grayish tinge. A number of rather large gray-blue spots on preorbital region, cheek, and opercles. Dusky streak from eye to suprascapula, along side of body to caudal base above, ending in black pale-edged ocellus about size of pupil. Six broad transverse dusky-olive bands cross dark lateral streak, each much wider than interspaces. Behind pectoral dark band broken regularly by pale vertical interspaces, first and penultimate resulting dark blotches especially dark or blackish. Costal region with pale round median spot on each scale, and hind edge of each scale also with dark vertical bar. Vertical

¹ Proc. Z. Soc. London, 1913, p. 1013.

fins grayish on outer portions, brownish basally, with obscurely mottled appearance on spinous dorsal. Last membranes of soft dorsal and anal with few small pale gray spots, also similar spots on middle of caudal. Pectoral gray. Ventral whitish, gray-brown on front outer portion, hind edges white. Iris neutral tint. In the young examples edge of spinous dorsal and front upper edge of soft dorsal maroon-color, fins blotched lengthwise with darker olive. Several pale spots at bases of last dorsal and anal rays. Front ventral edge and lower anal edge broadly gamboge.

Length 33 to 100 mm.

Bufo valliceps Wiegmann.

Four examples, snout to vent 26 to 40 mm.

Hyla bocourti (Mocquard).

Head little longer than wide. Snout rounded, little longer than eye. Canthus rostralis distinct. Loreal region slightly oblique and concave. Tongue ovoid, slightly emarginate behind. Vomerine teeth in two small slightly oblique groups between choanae. Interorbital little wider than upper eyelid. Tympanum distinct, nearly half diameter of eye. Skin weakly though finely granular above, belly and lower femoral region coarsely granular. Fingers very slightly webbed at bases. Toes two-thirds webbed, and disks half size of tympanum. Distinct fold along inner tarsal edge. Gray-brown above paler or whitish beneath, in alcohol. Dull brownish obscure interorbital bar, and similar band from each upper eyelid down back to vent, with narrow vertebral separation. More contrasted dark brown band from each side of snout tip back to eye, including tympanum and ending in groin, and narrow whitish line along its entire upper edge. Length, from snout to vent, 17 mm.

It resembles *Hyla eximia* Baird in having the dark lateral band from snout to groin. It differs in the obscure dark dorsal band each side of the vertebral line and the toes better webbed.

Eleutherodactylus humeralis sp. nov. Fig. 2.

Body well depressed, elongately ovoid in contour as seen from above, and width slightly greater than length of head. Latter very broad, well depressed. Snout flattened above, and contour as seen from above broadly triangular, tip obtuse. Canthus rostralis distinct. Loreal region level and oblique. Eye moderate, about $\frac{2}{3}$ length of snout, or equal to space between front eye edge and nostril. Mouth large, rictus falling about opposite hind edge of eye. Lips moderate. Maxillary teeth uniserial, conic, mostly uniform.

Vomerine teeth in two large patches, rather closely approximated, oblique, and behind hind edges of choanæ. Tongue broadly ovoid, last third free, and hind edge generally convex, except slight median emargination. Choanæ smaller than vomerine patches of teeth. Interorbital flattened, upper eyelid $\frac{2}{3}$ its width. Tympanum ellipsoid, $\frac{2}{3}$ eye-diameter.

Skin largely smooth, a few granules around vent and post-femoral region. No distinct fold across throat or breast.

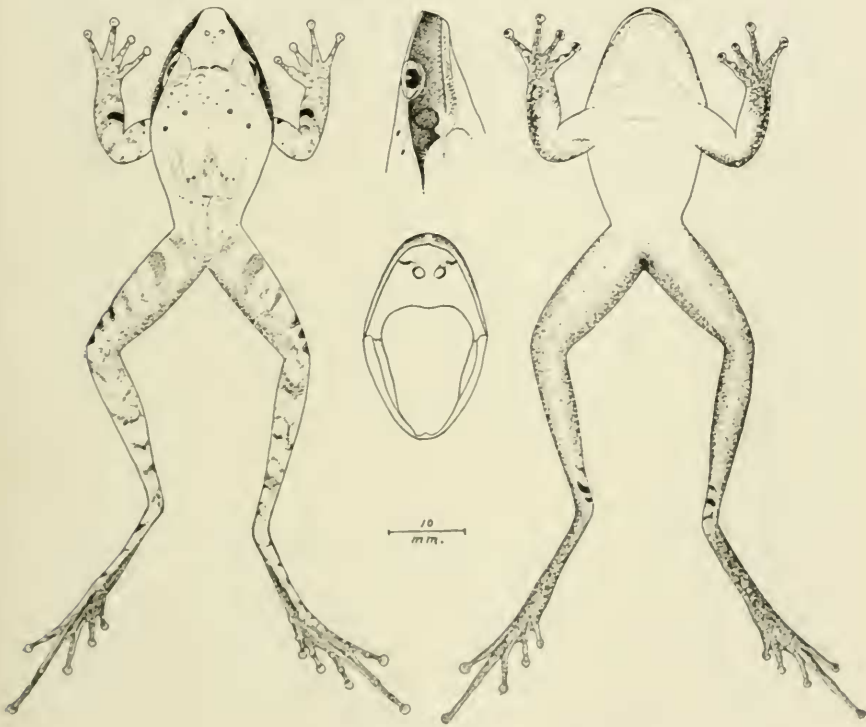


Fig. 2. — *Eleutherodactylus humeralis* Fowler

Limbs all slender. Fingers free, and only outer toes one-third webbed. First finger little longer than second, and slightly swollen basally. Third finger longest. Tubercles on phalanges apparently well developed. Disks on toes and fingers moderately small, rounded, apparently not quite half size of tympanum. Toes slender, fourth much longest. Apparently no tarsal fold, though hind tubercle distinct.

Color in alcohol pale gray-brown generally above, lower surfaces

largely uniform whitish. On upper surface of snout two small blackish rings, near canthus rostralis and midway in snout length. On each scapular region two similar ones. Narrow dusky streak or line across interorbital from one eyelid to the other. Dusky-black band from each side of snout tip back below eye including tympanum to shoulder. Several obscure dusky small circles form irregular dark triangle on front of pelvis above. Each joint of fore limbs with several obscure brownish transverse bars, one of which, with black blotch, on each ulna and humerus. Hind limbs with three or more similar obscure cross-bars. Outer surface of femur near knee with three more or less connected blackish blotches. Both outer and inner edges of hind limbs, including tibia, tarsus and metatarsus, dusky. Lips mottled with brownish.

Length, from snout tip to vent, 33 mm.

Type, No. 19,593, A. N. S. P. Guapilis, Costa Rica. July, 1915. D. E. Harrower.

This species appears closely related to *E. bocourti* (Brocchi),² but differs in several respects. *E. bocourti* has the partly circular tongue entire, the tympanum one-third the eye, first and second fingers of nearly equal length, toes with a rudimentary web, and arms and legs marbled with brown above.

(*Humeralis*, with reference to the dark blotches on the humerus near the knee.)

Dendrobates tinctorum (Keferstein).

One example dull crimson-purple above, variegated with darker markings. A small one beautiful dark crimson, marked with blackish dots on the back and head above. Its lower surface is blotched with blackish. Another larger example buff in general tint, marked or speckled with blackish above, and upper surface of hind limbs, and lower surface of same, blackish. Throat and belly pale buff, with few scattered dusky specks. Altogether four, 13 to 22 mm., measured from snout to vent.

Rana cæruleopunctata Steindachner.

Color in alcohol dark olive on back, with obscure small rounded dull dark bluish spots down middle from between eyes to vent. Blackish band begins on each side of snout near tip, extends back below eye, broadens, includes tympanum and continues to groin, edged very narrowly above its whole extent with whitish line. From

²*Hylodes bocourti* Brocchi, Miss. Sc. Mex. Batr., 187 , 50, Pl. 16, fig. 2. Coban, Guatemala.

below eye to shoulder distinct broader white line forms part of lower margin. Dusky band from fore part of shoulder on front of forearm. Front limbs brownish, blotched with darker, and brown streak along entire hind edges. Hind limbs brownish above, each with two or three dusky cross-bars on upper surfaces. Hind surface of each femoral region above with two large golden blotches, lower surface mostly whitish and immaculate. Throat, breast and belly mottled brownish-dusky. Glandular fold scarcely developed. Length, snout tip to vent, 28 mm.

CHIRRIPO RIVER VALLEY.

A few specimens were obtained in this region during late July.

Phrynisus varius (Kerferstein).

Color when fresh brilliant moss-green, marked with bright chrome-yellow spots on back and cross-bars on upper surfaces of limbs. Lower surface of body pale yellowish, marked with slaty blotches and irregular splotches or bands.

Another example also bright green above, finely speckled with blackish, yellow blotches edged with dusky, and sides slaty-gray. Under surface pale yellowish-white with irregular slaty-gray blotches, more sharply defined on lower femoral region.

A third example black above with bright cadmium-orange blotches from behind eye on sides and upper surfaces of limbs. Middle of back with small chrome-yellow specks. Lower surface of head and line above upper lip chrome-yellow, throat with several large black blotches. Under surface of head black, like back marked with chrome-yellow blotches.

Length 31 to 41 mm., from snout tip to vent.

Oxybelis acuminatus (Wied).

One example, 392 mm.

PORT LIMON.

A more representative collection was gathered during July and August than elsewhere in Costa Rica during this trip. The fishes were all obtained from fishermen or in the markets.

Albula vulpes (Linné).

One, 147 mm. long.

Sardinella humeralis (Valenciennes)

Four examples, 115 to 120 mm.

Opisthonema oglinum (Le Sueur)

One, 190 mm.

Scomberomorus cavalla (Cuvier).

Two, 127 to 195 mm.

Caranx crysos (Mitchill).

One, 125 mm.

Caranx latus Agassiz

One, 97 mm. Head 3; depth $2\frac{1}{2}$; scutes 35; snout $3\frac{1}{2}$ in head; eye $3\frac{1}{5}$; maxillary $2\frac{1}{10}$; interorbital $3\frac{2}{3}$; curved part of lateral line $1\frac{2}{3}$ in straight portion. Opercular spot obsolete. Narrow naked area medianly on front of breast.

Vomer setapinnis (Mitchill).

Two, 122 and 131 mm.

Chloroscombrus chrysurus (Linné).

Four, 118 to 140 mm.

Trachinotus glaucus (Bloch).

One, 128 mm.

Trachinotus argenteus Valenciennes.

Head $3\frac{1}{4}$; depth 2; D. I, VI-I, 23; A. II-I, 21; snout 4 in head; eye $3\frac{1}{5}$; maxillary $2\frac{1}{2}$; interorbital $2\frac{2}{3}$. Body deep, compressed. Head compressed. Snout broadly convex, length half its width. Eye large, adipose-eyelid rather well developed. Maxillary reaches about opposite first third in eye. Teeth fine, conic, in narrow band above and in broad band below. Mouth rather small, lower jaw much shorter. Nostrils together on middle of front surface of snout. Interorbital high, convex. Rakers about 6+10, lanceolate, about $\frac{2}{7}$ of eye. Scales small. Lateral line complete, slightly wavy in front. Last dorsal spine longest. Soft dorsal with distinct lobe in front, and when depressed reaches $\frac{3}{8}$ in total length of fin. Soft anal also with short front lobe, when depressed $\frac{2}{3}$ total length of fin. Caudal strongly forked, tip of each lobe sharp, and an eye-diameter longer than head. Pectoral $1\frac{1}{3}$ in head. Ventral shorter, $2\frac{1}{4}$ in head. Color in alcohol grayish above, sides and below silvery-white. Front lobe of soft dorsal dusky, also outer edge of upper caudal lobe, fins otherwise whitish. Iris whitish. Length 135 mm.

This little-known fish differs from *T. carolinus* (Linné), when examples of the same size are compared, in the larger eye, more pointed dorsal, anal and caudal lobes, blackish tip of dorsal lobe and dusky edges to caudal lobes.

Pomadasis ramosus (Poey).

Two, 150 and 180 mm.

Eucinostomus harengulus Goode and Bean.

Two, 110 mm.

Gerres olisthostomus Goode and Bean.

Three, 96 to 188 mm.

Larimus breviceps Cuvier.

Two, 128 and 130 mm.

Polydactylus virginicus (Linné).

Two, 190 and 205 mm.

Cichlasoma maculicauda Regan.

Two, 105 and 152 mm.

Hyla punctariola Peters.

Head long as broad. Snout triangular, little longer than eye. Canthus rostralis distinct. Loreal region level, oblique. Tongue ovoid, last third free, hind edge slightly emarginate. Vomerine teeth in two small slightly oblique groups, well separated, and close behind choanæ. Interorbital little wider than upper eyelid. Tympanum obscure, apparently slightly less than half of eye. Skin smooth above, also on throat. Belly and lower femoral region granular. Fingers entirely free. Inner toes slightly webbed basally. Disks about half of eye. Several metatarsal tubercles and one at heel. Light buff-brown on back and upper surfaces of limbs, which latter with obscure cross-blotches or spots. Supraorbital width darker brown than rest of upper surface of head. Upper lip white-edged. Lower surface of body creamy-white, under a lens seen to be marked most everywhere with minute yellowish dots. Disks all whitish. Length, from snout tip to vent, 27 mm.

Eleutherodactylus polyptychus (Cope).

Great variation in color is noticeable in the seven examples from this locality. The largest brownish down middle of back, streaked irregularly on tubercles with dusky. Head brown above, upper lip with short dark streaks. Limbs brownish above, front pair paler, and hind pair each with three or four dusky cross-bars on femur, tibia, tarsus and metatarsus. Lower surface of body and sides whitish, latter formed in contrast as brown streak continues back from eye including tympanum and fades out on front side of belly. Several of the larger examples show a ruddy tinge on the femoral surface closing against the groin and inner surfaces of femur and tibia. Smaller examples all present less striking color-pattern, especially on sides, which only slightly paler. In all dark cross-bars on hind limbs conspicuous. One small example shows narrow pale

vertebral line. Another has blackish streak from eye over shoulder very pronounced. Largest example 23 mm., measured from snout tip to vent, smallest 9.

Dendrobates tinctorum (Kesterlein).

Six examples, all uniform dark purplish-black in alcohol. Length 20 to 22 mm., measured from snout tip to vent.

Eublepharis dovii Boulenger.

Two examples, 80 to 127 mm.

Anolis lunifrons Cope.

Dewlap little developed, and sides of neck crimson. Nine examples, 80 to 127 mm.

Anolis insignis Cope.

One, 220 mm.

Anolis capito Peters.

Two, 80 to 202 mm.

Anolis humilis Peters.

Five, 38 to 65 mm.

Ameiva festiva (Lichtenstein).

One, 238 mm.

Ameiva undulata quadrilineata (Hallowell).

Two, 170 and 182 mm. long. These represent *Ameiva gabbiana* Cope, merged in the synonymy of the present species by Dr. Boulenger. They vary slightly. The single enlarged rounded preanal plate is present. Scales in middle of throat but slightly enlarged, and collar with an enlarged plate each side of median line. Humeral scutes in one row. Great variation is also seen in the scutes on top of the head. In one example the frontonasal is not in contact with the posteronasal, as a small scale intervenes. Scales in the supra-orbital semicircles and at occiput quite variable. Some blackish dots on throat.

THE CANAL ZONE.

The collections from this section were obtained at Colon, Gatun, Pedro Miguel, Empire and Panama, and are from both Atlantic and Pacific drainages.

COLON.

Only marine fishes were obtained at this locality. A number of smaller species were collected on the reef at Torro Point, in the Caribbean, during July, in which case the locality is given.

Rhinobatos percellens (Walbaum).

One, agreeing with an example from Trinidad.

Tarpon atlanticus (Valenciennes).

Small one, 107 mm. long.

Sardinella humeralis (Valenciennes).

One, 100 mm.

Opisthonema oglinum (Le Sueur).

Three, 80 to 90 mm. long. Also three from Torro Point, 57 to 85 mm. long. All have median caudal rays dusky and row of dark spots on side back from gill-opening.

Anchovia gilberti Evermann and Marsh.

One example, 118 mm.

Hyporhamphus unifasciatus (Ranzani).

Two, 156 and 166 mm. Lower caudal lobe slightly longer than upper.

Sphyræna barracuda (Walbaum).

One, 130 mm. long, from Torro Point.

Sphyræna guachancho Cuvier.

One example, 168 mm.

Mugil curema Valenciennes.

One small example from Torro Point.

Holocentrus adscensionis (Osbeck).

One, 153 mm. long.

Holocentrus siocifer Cope.

One from Torro Point differs from the type, as figured by me, in the black markings on the first two membranes of the spinous dorsal entirely of that color, except the narrowly whitish base. All other membranes of spinous dorsal dusky to blackish, especially basally. Length 52 mm.

Scomberomorus cavalla (Cuvier).

Four, largest 148 mm. in length.

Caranx hippos (Linné).

Two examples, 150 and 165 mm.

Caranx crysos (Mitchill).

One, 132 mm. long.

Vomer setapinnis (Mitchill).

Two, 123 and 183 mm.

Chloroscombrus chrysurus (Linné).

One, 140 mm. long.

Seserinus paru (Linné).

One, 138 mm.

Centropomus undecimalis (Bloch).

One, 254 mm.

Rypticus arenatus Cuvier.

One, 130 mm.

Lutianus apodus (Walbaum).

One, 126 mm. long. Also two from Torro Point, 42 and 43 mm.

Rhomboplites aurorubens (Cuvier).

One, 160 mm.

Hæmulon parra (Desmarest).

One, 145 mm.

Hæmulon plumieri (Lacépède).

Two, 133 and 142 mm.

Hæmulon flavolineatum (Desmarest).

One, 140 mm.

Brachygenys chrysargyreus (Günther).

Two, 143 and 152 mm.

Pomadasis ramosus (Poey).

One, 128 mm.

Orthopristis scapularis Fowler.

One, 170 mm. long.

Archosargus unimaculatus (Bloch).

One, 120 mm.

Isopisthus harroweri sp. nov. Fig. 3.

Head $3\frac{1}{5}$; depth $4\frac{1}{8}$; D. VIII-I, II, 16, 1; A. II, 1, 18; P. III, 16; V. I, 5; scales 105 in series just above lateral line to caudal base; 16 scales above lateral line to soft dorsal origin; 16 scales below lateral line to anal origin; about 48 scales before spinous dorsal origin; about 60 pores in lateral line to caudal base, and about 40 more pores over caudal fin; head width $2\frac{2}{3}$ in its length; head depth at occiput $1\frac{2}{5}$; third dorsal spine $2\frac{1}{2}$; first branched dorsal ray $2\frac{1}{5}$; first branched anal ray $2\frac{1}{3}$; least depth of caudal peduncle $3\frac{2}{5}$; caudal $1\frac{2}{5}$; pectoral $1\frac{1}{3}$; ventral $1\frac{2}{3}$; snout 4 in head, measured from upper jaw tip; eye $4\frac{2}{3}$; maxillary $2\frac{1}{8}$; interorbital $3\frac{1}{2}$.

Body elongate, slender, well compressed, edges mostly convex

and rather long occipital keel from occipital process slightly trenchant. Caudal peduncle compressed, least depth $1\frac{3}{4}$ its length.

Head well compressed, upper profile concave over eye, otherwise convex, and lower profile steeply inclined convexly. Flattened sides of head approximated below. Snout convex, so that tip of upper jaw level with upper eye edge, length $\frac{7}{8}$ its width. Eye large, rather high, little longer than deep, well anterior. Mouth large, greatly inclined, and lower jaw strongly protruding. Maxillary extends back opposite middle of eye. Teeth large, conic, and depressible in outer series in upper jaw, which also with one enlarged fang-like canine in front, and all along inner edges band of fine teeth. Lower teeth erect, firm, conic, several enlarged along sides of jaws, though between them also single row of small simple teeth. Tongue

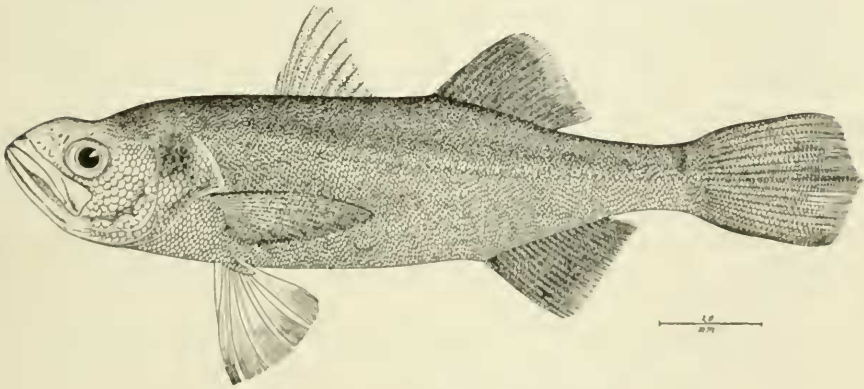


Fig. 3.—*Isopisthus harroweri* Fowler.

long, smooth, free, rounded in front. Mandible convex over surface, capable of great dilation. Nostrils together, close before and slightly above upper edge of eye. Interorbital convex. Suprascapula jagged and hind edge notched. Opercle with large angular membranous flap behind. Hind preopercular edge with membranous edge, notched finely.

Gill-opening extends forward about opposite front nostril. Rakers iv, 1+8, iv, lanceolate, 2 in eye. Filaments about long as rakers. Isthmus narrowly and deeply trenchant.

Scales small, cycloid, more or less irregularly disposed, and very loosely adherent. Head scaly, about 6 rows on cheek. On trunk scales smaller and with more crowded appearance on median dorsal line, about bases of dorsals and caudal. Rather large scales forming

sheath along anal base. Soft dorsal and anal mostly covered with inconspicuous small scales. Lateral line complete, nearly concurrent with dorsal profile. Tubes double on each scale, rather large.

Spinous dorsal inserted little nearer origin of soft dorsal than hind eye edge, third spine longest, second and fourth subequal, and depressed fin extends $\frac{2}{3}$ to soft dorsal. Latter inserted midway between hind preopercle edge and caudal base, first branched ray highest, and fin extends $\frac{3}{8}$ to caudal base. Anal inserted close behind soft dorsal origin, little larger, similar. Caudal double truncate, median rays longest and form point. Pectoral long, pointed upper median rays longest, reach $\frac{2}{3}$ to anal. Ventral inserted little behind pectoral origin, and fin half way to anal origin.

Color in alcohol brownish-olive above, sides and lower surface silvery-white. Head olivaceous above, whitish below. Large dusky nebulous blotch on opercle. Dorsals and caudal dull olive, pectoral paler. Ventrals yellowish, tinged with orange basally. Anal pale yellowish, lower edge narrowly dusky.

Length 174 mm.

Type, No. 45,236, A. N. S. P. Colon, Canal Zone. D. E. Harrower.

Related to *Isopisthus parvipinnis* (Valenciennes), which would differ in having more dorsal rays (21 instead of 16) and fewer anal rays (16 or 17 instead of 18), fewer pores in the lateral line (52 to 54 instead of 60), and in having an indistinct elongate dark blotch from behind the eye to the middle of the opercle.

(Named for Mr. D. E. Harrower, who collected the type.)

Cynoscion jamaicensis (Vaillant and Bocourt).

One, 145 mm.

Larimus breviceps Cuvier.

Two examples, 114 and 158 mm.

Conodon nobilis (Linné).

One, 140 mm.

Umbrina coroides Valenciennes.

Two, 164 and 182 mm.

Eucinostomus harengulus Goode and Bean.

Two, 65 and 117 mm.

Gerres rhombeus Cuvier.

One, 115 mm.

Polydactylus virginicus (Linné)

One, 196 mm.

Abudefduf mauritii (Bloch).

Three from the reef at Torro Point, 34 to 40 mm.

Eupomacentrus fuscus (Valenciennes).

Ten from the Torro Point reef. Three which are young have a black ocellus at the base of soft dorsal in front, a black saddle-like blotch on the upper surface of the caudal peduncle, and a black axillary pectoral blotch. Length 31 to 95 mm.

Iridio bivittatus (Bloch).

Young example from the reef at Torro Point, 26 mm. in length.

Pomacanthus arcuatus (Linné).

One example, 114 mm. long. The transverse bands are bright lemon-yellow.

Holacanthus tricolor (Bloch).

One, 145 mm. long.

Hepatus cæruleus (Schneider).

One, 100 mm. long.

Hepatus hepatus (Linné).

Two, 112 and 115 mm. long.

Hepatus bahianus (Castelnau).

One, 145 mm. long. Hind caudal edge narrowly whitish.

Spheroides testudineus (Linné).

One, 132 mm. long.

Philypnus dormitor (Lacépède).

One, 125 mm. long from the reef at Torro Point.

Dormitator maculatus (Bloch).

One, 78 mm. long.

Mapo soporator (Valenciennes).

Seven examples from the reef at Torro Point, 36 to 67 mm. long.

Rupiscartes atlanticus (Valenciennes).

One from the Torro Point reef, 70 mm. long.

Ogilbia cayorum Evermann and Kendall.

One from Torro Point reef, 72 mm. long.

Citharichthys arenaceus Evermann and Marsh.

One, 133 mm. long.

GATUN.

A small collection of fresh-water fishes, amphibians and lizards from this locality.

Brycon striatulus (Kner).

Four examples, 65 to 83 mm.

Astyanax æneus (Günther).

Two, 98 to 103 mm.

Mollienisia sphenops (Valenciennes).

A large series of all ages (33 examples), 29 to 52 mm.

Acara oeruleopunctata Kner and Steindachner.

Fourteen, 47 to 82 mm.

Cichlasoma maculicauda Regan.

Nine examples, all small, about 53 mm. Also large one, 258 mm. long.

Bufo marinus (Linné).

Two, 43 to 52 mm., from snout tip to vent.

Bufo typhonius (Linné).

One, with dark broad vertebral band, 32 mm. from snout tip to vent.

Eleutherodactylus nubilus (Günther).

Two examples, 13 to 28 mm. from snout tip to vent.

Anolis trochilus Cope.

Four examples, 111 to 125 mm. in total length.

Corythophanes cristatus (Merrem).

One, 240 mm.

Euyalioides heterolepis (Bocourt).

One found around rocks near a stream. Length 212 mm.

Ameiva ruthveni Barbour and Noble.

This is represented by one example, 283 mm. long. It differs in several respects from the original account. As there is a group of five anterior supraoculars, with the second largest, the frontal is in contact with the second, third, fourth, and very slightly the fifth, supraoculars. No intercalated pair of scales between outer pair of large occipitals and frontoparietals. The two posterior supraoculars are separated from the superciliaries by narrow wedges of granules, in three or four rows behind. About ten large scales in middle of chin, posteriorly one enlarged twice size of any others. From frontal, down middle of back and tail anteriorly, narrow pale streak. Length 283 mm.

Apparently very closely related to *Ameiva festiva*, of which I have compared examples from Colombia and Nicaragua, which agree with my Port Limon example.

PEDRO MIGUEL.

Rhamdia montaguensis (Günther).

One example, 145 mm.

Piabucina panamensis Gill.

Three, 93 to 105 mm. Active and difficult to secure.

Astyanax mexicanus (Filippi).

Four examples, 67 to 72 mm.

Pœciliopsis retropinna (Regan).

One example, a female, 30 mm. long.

Bufo marinus (Linné)

One, 45 mm. long, measured from snout to vent, with three ticks on its back.

Bufo typhonius (Linné).

Two small examples which agree with Ecuador material. Length 31 and 32 mm. from snout tip to vent.

Leptodactylus caliginosus (Girard).

Vomerine teeth in two closely approximated areas. Eye half length of snout. Nostril near first third in snout length. Tympanum $\frac{1}{3}$ of eye. Skin smooth, except hind femoral region posteriorly, which granular. Slight fold extends from shoulder to groin. Color in alcohol gray-brown generally. Broad blackish triangle between eyes. Black band from each side of snout back, including eye and tympanum, to shoulder, and posteriorly continued as several disconnected black spots. On each side of back, from above tympanum to groin above, black band. Middle of back with lengthwise blackish blotches forming two distinct series on pelvic region. Groin olive-yellow, with few dark cloudings. Fore limbs marbled with dusky, forming a large blotch at and behind elbow. Hind limbs mottled in more contrast with dusky, femoral and tibial regions with several broad dark blotches as cross-bars. Tarsi and metatarsi dusky, outer surfaces mottled or blotched with darker. Under surface whitish, lips mottled with grayish. Length 86 and 91 mm., measured from snout tip to vent. Locality given as Coroza.

Iguana tuberculata Laurenti.

Two young examples, 247 and 251 mm.

Basiliscus basiliscus (Linné).

A female, containing eggs. Length 467 mm.

Ameiva ameiva *præsignis* (Baird and Girard).

Color in alcohol largely greenish-brown on back. Yellow line each side of back extends from eye, and another similar, though white line from lower edge of eye to groin, interspace jet-black with row of obscure whitish spots. Black band also continued along side of tail at first, fading out behind. Tail brownish above, mottled with dusky. Below lower white lateral line, which most pronounced, gray shade and clouded with dusky or blackish. Under surface of head and trunk gray-white. Upper surface brown, sides whitish. Limbs brownish above reticulated with black, forming two broad black lengthwise lines on hind femoral region and upper continued at first along tail basally short space, gradually fading behind. One example, 255 mm.

Leptodeira polysticta Günther.

One, differing a little from Günther's figure in not having a distinct lengthwise dark bar dividing the neck, but with a lengthwise dark brown saddle-like blotch, pale in the middle. Length 470 mm.

Elaps *fulvius* (Linné).

Two examples, 502 and 528 mm.

EMPIRE.

Eleutherodactylus rhodopsis Cope.

Two examples, 15 mm., measured from snout tip to vent.

Anolis trochilus Cope.

One example, 83 mm. long.

Anolis lionotus Cope.

Three, 70 to 158 mm.

Norops auratus (Daudin).

Three, 114 to 161 mm.

PANAMA.

The fishes of Panama Bay have been elaborately treated by Profs. C. H. Gilbert and E. C. Starks in 1905, so that the list here given is only supplementary.

Tachisurus steindachneri Gilbert and Starks.

Head $3\frac{3}{4}$ to $3\frac{7}{8}$; depth $4\frac{3}{4}$ to $5\frac{1}{2}$; D. I, 6 and I, 7; A. VI, 13 and 13; snout $2\frac{3}{4}$ to $2\frac{7}{8}$ in head; eye $5\frac{1}{4}$ to $5\frac{1}{2}$; mouth width $2\frac{2}{3}$ to 3; inter-orbital $2\frac{2}{5}$; dorsal spine $1\frac{1}{5}$ to $1\frac{1}{3}$. Palatine teeth coarsely granular, without a backward angle extending on inner edge. Granulations or striæ on head extend forward nearly opposite middle of eyes.

Fontanel extends back as narrow groove to occipital plate. Inner surfaces of ventral black, front edge of fin white. Pectoral similarly blackish inside. Upper caudal lobe little longer. Two examples, 200 and 210 mm. long. They differ slightly from the figure given by Gilbert and Starks in the striæ on top of the head extending more distinctly forward.

Muræna clepsydra Gilbert.

One, 595 mm. long.

Pæciliopsis presidionis (Jordan and Culver).

Male and female, 23 and 37 mm.

Tylosurus scapularis Jordan and Gilbert.

Caudal peduncle about wide as deep, and lateral line forms slight though inconspicuous keel along each side. Eye 7 in upper jaw, 3 in postocular part of head. Upper jaw nearly an eye-diameter longer than lower, and not completely closing against lower posteriorly, so that distinct interval is seen between them. D. 11, 14; A. 11, 15. Upper surface of body greenish in alcohol, especially on head. Sides and below silvery-white. Narrow lateral band of leaden, tapering or narrowed at shoulder and caudal base, and more or less expanded behind. Iris silvery-white. Fins all pale. Length 695 mm.

Holocentrus suborbitalis Gill.

Three examples, 87 to 90 mm.

Mugil curema Valenciennes.

Fourteen small examples, largest 122 mm.

Caranx hippos (Linné)

Two, 111 and 175 mm.

Caranx caballus (Günther).

One, 160 mm. long.

Vomer setapinnis (Mitchill).

Two, 172 and 182 mm.

Centropomus unionensis Bocourt.

One example, 135 mm.

Alphestes multiguttatus (Günther).

Two, 147 and 172 mm. Pectoral with at least five distinct dark vertical cross-bars.

Diploctrum radiale (Quoy and Gaimard).

One, 190 mm. Called "sand mullet."

Rypticus nigripinnis Gill.

Two small examples, 48 and 49 mm.

Xenichthys xanti Gill.

One, 162 mm.

Lythrulon flaviguttatum (Gill).

Two, 140 and 148 mm.

Anisotremus interruptus (Gill).

Four young, 30 to 54 mm.

Anisotremus tæniatus Gill.

One example, 143 mm. long.

Bairdiella ronchus (Valenciennes).

Head $2\frac{7}{8}$; depth $3\frac{2}{5}$; D. X-I, II, 25; A. II, 8; scales 46 in lateral line to caudal base; snout $3\frac{1}{2}$ in head; eye $4\frac{3}{4}$; maxillary $2\frac{1}{5}$; inter-orbital 4. Snout convexly protruding in upper profile. Lower jaw slightly projects. Lower teeth mostly uniserial, enlarged, conic. Symphyseal knob distinct, surmounted by two canines. Eye little shorter than snout. Preopercle denticles small, larger one below directed forward. Second anal spine $2\frac{2}{5}$ in head. One example, 178 mm. long.

Eucinostomus californiensis (Gill).

One, 83 mm.

Gerres peruvianus Valenciennes.

Three, 75 to 85 mm.

Upeneus grandisquamis Gill.

Four examples, 117 to 164 mm.

Acara cæruleopunctata Kner and Steindachner.

One, 148 mm.

Abudefduf mauritii (Bloch).

Series of all ages which appear to agree with the Atlantic form. Length 38 to 102 mm.

Abudefduf declivifrons (Gill).

One example, 67 mm.

Pseudoscopus ferrico (Jordan and Gilbert).

Called "parrot chub." Color in alcohol dusky-brown generally. Blue-green spots radiate around eye. Jaws greenish. Vertical fins livid dull dusky-purple, edges of dorsals and anals narrowly blue-green. Dusky blotch at pectoral base, fin pale. Outer ventral edge pale, rays brownish. Iris yellowish. Length 206 mm.

Hepatus crestonis Jordan and Starks.

Head $3\frac{2}{5}$; depth $1\frac{3}{4}$; D. IX, 25; A. III, 24; snout $1\frac{1}{2}$ in head; eye 4; interorbital $2\frac{1}{5}$; pectoral $1\frac{1}{10}$. In alcohol largely uniform dark chocolate-brown. Dorsals and anals blackish. Caudal slightly paler basally. Pectoral with broad whitish submarginal shade. Length 163 mm.

Chætodon humeralis (Günther).

One example, 124 mm. Jordan and Evermann state "3 dark bands across caudal peduncle at base of fin; caudal fin with a faint band; ventrals dark." My example shows but a single dark transverse bar on caudal peduncle at caudal base and caudal fin with two very sharply contrasted blackish vertical bars slightly expanded medianly, and anterior much wider than any of bars on caudal. The ventrals are whitish with two very indistinct vertical gray bars.

Pomacanthus zonipectus (Gill).

Head $3\frac{1}{4}$; depth $1\frac{2}{5}$; D. XI, 25; A. III, 21; snout 3 in head; eye $3\frac{1}{3}$; interorbital 3. Color faded in alcohol, vertical pale lines whitish. Traces of similarly curved lines, parallel, some irregular in dark areas between whitish lines. Also dark areas with numerous small obscure blackish spots. Length 125 mm.

Chætodipterus zonatus (Girard).

One example, 148 mm.

Balistes vetula Linné.

Two, 100 and 103 mm. long.

Spheroides annulatus (Jenyns).

Two, 49 and 94 mm. long. The dark spots are smaller and more numerous than in Atlantic examples of *S. testudinicus* of the same size.

Diodon hystrix Linné.

Two examples, 122 to 125 mm.

Scorpxena mystes Jordan and Starks.

Head $2\frac{2}{5}$; depth $3\frac{1}{3}$; D. XII, 10; A. III, 5; scales 39 to caudal base and 2 more on latter, along lateral line; 7 scales above l.l.; 15 scales in vertical series between l.l. and spinous dorsal origin; snout $3\frac{1}{5}$ in head; eye 5; maxillary $2\frac{1}{8}$; interorbital 5; about 27 pores in lateral line to caudal base. No supraorbital cirrus. Slight pit below front eye edge and suborbital stay. Length 250 mm.

Mapo saporator (Valenciennes)

Twenty-nine examples, 25 to 122 mm.

Garmanina paradoxa (Günther).

Head $3\frac{1}{3}$; depth $4\frac{1}{2}$; D. VII, 1, 11, 1; A. I, 9, 1; scales 15 in median series on hind part of trunk, begin opposite origin of soft dorsal; 8 scales transversely between last dorsal and anal rays; snout $4\frac{1}{2}$ in head; eye $5\frac{1}{3}$; maxillary $2\frac{1}{2}$; interorbital about 11. Gill-rakers 1+8 short points with broad bases, much shorter than filaments. Color in alcohol pale brownish generally, scarcely paler below. About 13 pairs of deeper brownish transverse bars, from back down along side, and each 2 pairs placed closer to one another, and in places irregularly joined. Each bar seen to be forked as a darker reticulation around a paler spot or centre, also reticulations of various extent. Similar dark transverse bar extends down on cheek, though narrower one immediately behind eye and another on top of head before gill-opening, not extending down on side of head. Iris with pale circle around pupil. Ventrals blackish, edge narrowly whitish. Fins all grayish, clouded or obscurely marked with darker. Length 42 mm.

Microgobius miraflorensis Gilbert and Starks.

One 26 mm. long. Gilbert and Starks give A. 17, though their figure shows 1, 10. My example lacks the cirri about the jaws they represent, and at present the dark spots on the fins are much more contrasted.

Hypsoblennius striatus (Steindachner).

Fourteen examples, 46 to 80 mm.

Batrachoides pacifici (Günther).

Two adults, 178 and 222 mm. long. Young examples differ in the absence of scales.

Gobiesox microspilus sp. nov. Fig. 4.

Head $2\frac{1}{2}$; depth 5; D. 13; A. 9; P. 25; head width $1\frac{1}{3}$ its length; snout $3\frac{1}{2}$; eye 6; mouth width $2\frac{1}{5}$; interorbital $2\frac{4}{5}$; third dorsal ray 3; third anal ray $3\frac{2}{5}$; least depth caudal peduncle $4\frac{1}{3}$; caudal $1\frac{3}{4}$; pectoral $2\frac{1}{5}$.

Body moderately long, depressed forward, compressed behind, convex above, flattened below, and slight median groove before anal. Caudal peduncle compressed, short and little free.

Head large, upper profile convex from snout tip to occiput, lower nearly straight and horizontal. Snout wide, convex over surface, length less than half its width as measured across front of eyes. Eye ellipsoid, high, centre slightly behind first third in head length. Eyelids not distinct, skin of head passing over. Mouth broad,

upper jaw slightly protruding. Lips broad, each fringed with rather long free dermal flaps. Transverse groove of premaxillaries distinct on snout above. Teeth in one row in each jaw, simple, conic, two front ones enlarged or canine-like above. Both jaws with anterior teeth little enlarged, and in front of lower more so, compressed or incisor-like, their tips rather broadly triangular. Inner buccal folds broad. Tongue broad, fleshy, depressed, free around edges. Nostrils rather close together, above level of eye near its front edge, anterior in short fleshy tube and posterior simple pore. Interorbital broad and slightly convex. Opercular spine not extending through integument, concealed.

Gill-opening extends forward about opposite last $\frac{2}{3}$ in head. Gill-rakers about 6 short rudimentary points, much shorter than short gill-filaments.

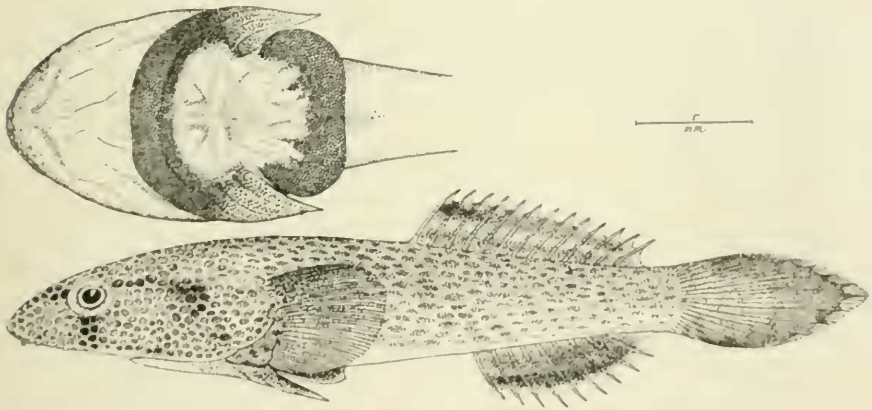


Fig. 4.—*Gobiosox microsplus* Fowler.

Skin smooth. A number of pores along lower side of head, and about fringes of lips.

Dorsal inserted about midway between centre of head and caudal base, tips of rays slightly protrude beyond connecting membranes. Anal inserted slightly behind dorsal origin, fin similar. Caudal rounded behind. Pectoral broad, upper rays longer, hind edge rounded, with free fold in front opposite lower base, and broad flap concealed, behind axilla, extends up from disk. Disk large, circular, its length about $1\frac{1}{4}$ in head. Margins of disk, all for broad extent, finely papillose. Vent. before anal, though slightly behind origin of dorsal.

Color in alcohol dark chocolate-brown, except lower surface of

head and disk, which whitish. Entire upper surface marked with closely set dusky spots, mostly of uniform size, and all with a more or less lengthwise disposition. Black blotch on head about an eye-diameter behind eye on its level. From eye dark spots are darkened, to form obscure streak forward, one below and one behind. Vertical fins largely dusky or blackish. Dorsal with sub-basal lengthwise whitish streak, one medianly and protruded tips of rays same color. Anal with median lengthwise paler area, protruded tips of rays whitish. Caudal crossed by three obscure darker bands, tips of rays whitish. Pectorals brownish. Iris slaty, olive-yellowish circle around pupil.

Length 37 mm.

Type, No. 45,213, A. N. S. P. Panama, in a pool. May 30, 1915. D. E. Harrower. Purchased.

Only the above example obtained. This species is very closely allied with *G. papillifer* Gilbert from Lower California. It differs in several respects. *G. papillifer* has the teeth in both jaws biserial. Its color is also said to be uniform dark olivaceous, and the color of the fins is different.

(*Μεγρος*, small; *σπίλος*, spot; with reference to the coloration.)

Bufo marinus (Linné).

Two large examples, 96 to 100 mm. long, measured from snout tip to vent.

Bufo valliceps Wiegmann.

Four, 26 to 40 mm.

Bufo typhonius (Linné).

One, 21 mm.

Hyla moquardi Günther.

Two, about 20 mm.

Eleutherodactylus rhodopsis (Cope).

One, 14 mm.

Dendrobates tinctorum (Kerferstein).

Four examples, caught in shrubbery. Length 25 to 32 mm.

Pelamis bicolor (Schneider).

One found swimming on the surface. It was hit with an oar and then captured by a boatman.